Fall 2019

CE 321-101: Water Resources Engineering

Yuan Ding

CE 321 - Water Resources Engineering Fall 2019
Section: 001 & 101

Text	Water Resources Engineering by Wurbs and James, 1st. Edition, Prentice Hall, 2002 ISBN: 0-13-0812935
Instructor	Prof. Yuan Ding, Office: 235 Colton Hall, 973-642-7046, ding@njit.edu

Prerequisite: MATH 279. Training in methods of developing water supplies and the means to treat supplies for consumptive use. Covers hydrologic techniques such as surface and ground water yield, hydrograph and routing analyses, and probabilistic methods related to hydrologic studies.

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. **Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Week	Topics
1	Introduction-Chapter 1
2,3	Chapter 2 Hydrology
4	Chapter 5 Open Channel Hydraulics, exam-1
5	Chapter 7 Hydrologic Frequency Analysis
6	Exam-2 (tentative. Confirmation on moodle)
7,8,9	Chapter 8 Modeling Watershed Hydrology
10	Field trip (tentatively, final decision on moodle)
11	Exam-3 (tentative. Confirmation on moodle)
12	Presentation
13,14	Chapter 9 Groundwater Engineering
15	Final exam

Note: Certain homework may require computer solutions (e.g. Hydrograph, etc.).

Exam 1	20 points
Exam 2	30 points
Exam 3	30 points
Final	20 points

The grade scheduling:

A=90 to 100	C=70 to 74
B+=85 to 89	D=60 to 69
B=80 to 84	F=59 or less
C+=75 to 79	W=Voluntary before deadline (school schedule)

EXAMs:

Generally, calculator is need for all exams. No other electronic device, storage medium, or accessory of any kind, is allowed during any exam.

The NJIT Honor Code will be upheld and any violations will be brought to the immediate attention of the Dean of Students.

Outcomes Course Matrix – 321 Water Resources Engineering

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
Student Learning Outcome 1: Identify how water supply needs are quantified and how water resources are developed.			
Discuss source of information and time horizons utilized for water resource planning.	1, 2, 7	1,2	Discussions, homework, and quizzes.
Discuss various options associated with developing water resources.	1, 2, 7	1, 2, 3	Discussions, homework, and quizzes.
Student Learning Outcome 2: Demonstrate how the potential for extreme hydrologic events (e.g. floods and droughs) are analyzed and quantified.			
Discuss floods and droughts as well as data sources.	1, 2, 4	1, 2, 3	Discussions and quizzes.
Discuss methodologies for assessing return periods associated with droughts and floods of interests	1, 2	1	Homework and quizzes.
Student Learning Outcome 3: Demonstrate the importance of insuring water resources that are adequate from both a quantitative and qualitative standpoint.			
Discuss the importance of water quality from a safety and aesthetic standpoint.	2, 4	1, 2, 3	Discussions and quizzes.
Provide examples of water quality standards and their rationale	4, 7	1, 2, 3	Discussions and quizzes.
Student Learning Outcome 4: Utilize state of the art techniques employed in the discipline.			
Present techniques utilized to assess safe yield of surface water supply sources, and potential draw down effects for groundwater supplies.	1, 2, 7	1, 2	Discussions, homework, and quizzes.

Discuss reservoir design. Reservoir and detention basin routing and hydrograph analysis.	1, 2, 7	1, 2	Discussions, homework, and quizzes.

CEE Mission, Program Educational Objectives and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program educational objectives are reflected in the achievements of our recent alumni:

1 – Engineering Practice: Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Alumni will advance their skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Our Student Outcomes are what students are expected to know and be able to do by the time of their graduation:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Revised: 2/13/18